UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,421	05/31/2001	Naotake Mohri	Q64554	8462

7590 04/15/2003

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

EXAMINER
PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
1762	6

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/872,421	Applicant(s) Mohri et al
	Examiner M.L. Polutta	Group Art Unit 1762

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 5/31/01 + 12/27/02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-18 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-18 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4-5

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

1. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of relative terms that lack clear metes and bounds in the claims, or supplied by a definition in the specification or cited relevant prior art, is vague and indefinite. In all the independent claims (1, 2, 3 and 10-12), see "hard" in "hard coat film", and "simple" in "simple substance". Note the latter can be any element or virtually any compound, especially if it is only made up of say 1 to 5 different elements, but when it becomes complex rather than simple is relative.

The independent claims all have the same phrasing as in claim 1, line 6-7, "a ferrous-family metal power or...having the same composition as the target as a simple substance or...of a plurality of metals", however it is unclear whether the "having..." phrases applies to just the metal powder or to the mix of the two powders, especially as they apparently all can be the same "simple substance", since this limitation in lines 4 and 7 is not differentiated (nor is clear antecedent basis indicated by an article, adding to the confusion). As written, the simplest limitation is two powders of the same metal(s) may be mixed, compressed, molded and then "burned"; or other substances may mixed in the metal powder, such as metal carbides or any other compound.

These claims appear to be discussing a chemical process, so one would apply the chemical meaning of "burned", i.e. to undergo combustion, or to consume fuel and give off light, heat and gases, but it is unclear what in the powder could be combusting. An alternate definition is "to undergo alteration or destruction by the action of fire or heat", which may also apply. The meaning of "burned" in these claims is ambiguous, since it is unclear which meaning necessarily applies, especially since "elute" means "extract" or specifically "to remove (absorbed

material) from an adsorbent by means of a solvent" (see Webster's New Collegiate Dictionary for various definitions), so does not particularly make any of the meanings of burn make more sense. What was the point of compression molding the powders, if you are just going to remove the metal (elute) from the molded powders in order to make the discharging electrodes? What process is intended to be occurring here is very unclear. From the original claims, and the original specification (before amending), a sintering process was done, but sintering and burning are NOT necessarily the same processes, although there may be some overlap.

In claims 1, 3, 10 and 12, "the base member" (line 11 in claim 1, etc.) lacks any antecedent basis, and it is unclear how this apparent part of the target, differs from the treatment target as a whole, i.e., base member is a label with no clear meaning. In claims 1 and 10, the intended meaning of the last 4 or 5 lines, respectively, is not clear. Are they supposed to mean, that there are two different discharge surface treatments being done? One on "the base member" and another after the hard coating was formed? Or is there supposed to be an alteration of electrical condition during the surface treatment according to changes that occur in or on the target during the treatment? The many unclear possible meanings are ambiguous, and clear use of articles to show proper antecedent basis and/or clear differentiation of apparently like limitations (with support shown) might clarify the issue. Note the preamble and this step are not necessarily commensurate in scope, since the former requires the coating to be formed, but in the later, there is no positive recitation of coating formation occurring, only that it already has.

Claims 2 and 11 have a problem similar to claims 1 and 10, in that the step with the discharge surface treatment is said to take place after the hard coat film has already formed, but the preamble is concerning the film formation. Claims 3 and 12 combine all the problems of their 2 proceeding claims.

2. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amendment filed 8/8/01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The changes in the specification and claims that substitute "burning" for "sintering" appear to include New Matter, as burning includes considerably broad possible range of effects and meaning than sintering, i.e. they are NOT synonymous. Original paragraph 20, appears to have support for use of "elute", although it is used in a manner that is not consistent nor idiomatic with its dictionary definition. The teaching "metal such as Co starts to elute to be buried in gaps between carbides thereby forming... solid solution", while a bit non-idiomatic, appears to be consistent with a partial sintering process that melts the metal powder or starts to melt it, such that if effects gap filling between carbides power particles. This is NOT burning in any of its definitions, hence also indicates that burning is New Matter.

Applicant is required to cancel the new matter in the reply to this Office Action.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 and 7-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Saito et al (08-300227A).

This rejection is being made as a 102/103 in part because the meaning of the claims is so unclear. Exactly what is taking place when "burning" (?sintering?) occurs is unclear, and not precisely determinable for the claims as written. However, Saito et al's process uses powders as claimed, such as carbide powders (WC, TiC, etc) or metal powders (Ti, V, Ta), that are compression molded as claimed, at temperatures consistent with those used in the specification (Table I & paragraph [0025], WC, Co powder compressed and heated to 1100°C, variously called 'temporarily quenched' or 'temporarily sintered', or lower than sintering temperature in the different translations). The abstract (English) indicates that the making of an article is achieved through changing an electrical discharge condition, which is consistent with the use of steps of the present claims. Also, note the pulse current illustrated in Fig. 15, changes the electrical conditions while paragraph [0028] of the applicant supplied machine translation refers to switching the electrode to minus and plus, which implies the presence of a switch for this change in electrical condition.

It is further noted that the PTO supplied version of the translation of Saito et al (227) uses "calcination sintered" instead of pre-sintered (partial translation) as "temporally quenched" (applicant supplied machine translation), and that calcination processes are more consistent with the claimed "burning" as they require volatiles to be driven off or too effect changes, such as oxidation or carbonization.

5. Claims 4-6 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (227A) as applied to claims 1-3 and 7-12 above, and further in view of Mori (6-246542A), or Inoue (63-210280A) or Saito et al (US 6,086,684).

Saito et al (227A) does not discuss using an inert gas in their discharge treatment process that produces hard coatings, but as exemplified by claim 4, it uses a working fluid that produces carbon during the discharge, so that with the consumable electrode the hard coating is formed. The partial translation of Mori provides for use of a mixture of organic material and gas, such as inert gas with a discharge (working) electrode, and the abstract of Inoue teaches use of inert gas in the coating material supply for use with the discharge electrode (1), in order to prevent oxidation or nitration.

It would have been obvious to use such a combination of fluids with Saito et al's processes, because the organic material of Mori supplies the taught carbon source, and the inert gas supplied conventional carrier means that will not interfere with the taught chemical process; or conversely the prevention of oxidization or nitration is consistent with Saito et al's desire to form carbon, and would aid in controlling the chemical reaction, limiting possible contaminates. Then Saito et al (684) supplies further teachings (col. 10, line 28-col. 11, line 20+) of alternative use of gas (Ar, N_2, Air) and oil for discharging to produce varied effects.

6. Claims 7-9 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (227 A) as applied to claims 1-3 and ~~17~~ 7-12 above, and further in view of Kaguku et al (10-225824) or Saito et al (10-512 A) or Toshiba Tungaloy Co. (5-261624A).

The primary reference while illustrating scanning and coating functions in Figures 2 and 13, does not discuss X, Y, Z movement to enable such scanning of the object being treated or coated. Any of the secondary references illustrate this scanning (Kaguku Fig. 1; Mori-Figures 1, 4, 16-22; Saito et al (512A) – Figures 1-4), with discussion thereof in their English abstracts or

partial translations. These teachings thus show the use of X-Y-Z means of movement to enable electrical discharge machining of 3-D objects, hence it would have been obvious of one of ordinary skill to apply such conventional manipulation means in the Saito et al (227 A) process, for the taught and demonstrated abilities to treat desired surface areas of substrates to be hard coated, enabling precision machining.

7. It is noted that this case has overlapping inventors with SN 09/462,793 (which was recently allowed, but also originally had serious nomenclature/translation problems), and it appears that some possible intended meanings may overlap therewith, but presently the meanings in the claims is too unclear to make a meaningful obviousness double patenting rejection.

Other art of interest appears to include Inoue et al (278B1) and Goto et al (333 and 611), with compression molded discharge electrode teachings.

8. Any inquiry concerning this communication from the examiner should be directed to M. L. Padgett whose telephone number is (703) 308-2336. The examiner can generally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m.; and fax phone numbers are (703) 872-9310 (regular); (703) 872-9311 (after final); and (703) 305-6078 (unofficial).

M.L. Padgett/dh 04/08/03
April 11, 2003

MARIANNE PADGETT
PRIMARY EXAMINER